



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/590,893

08/28/2006

Paul Gothard Knutson

PU030237

3761

24498

7590

10/14/2009

Joseph J Laks

1392 Heller Drive

Yardley, PA 19067-2714

EXAMINER

JAMAL, ALEXANDER

ART UNIT

PAPER NUMBER

2614

MAIL DATE

DELIVERY MODE

10/14/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/590,893	<b>Applicant(s)</b> KNUTSON ET AL.	
	<b>Examiner</b> ALEXANDER JAMAL	<b>Art Unit</b> 2614	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 July 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Amendment/ Arguments/Rule 132 affidavit*

1. Based upon the submitted arguments concerning the 112 rejection, the examiner agrees with applicant in that a patent need not teach what is well known in the art. The examiner withdraws the 112 rejection and again notes the original prior art rejection made the assumption that synchronizing any digital system with buffers is well known in the art both for applicant's claimed device **and also for** the disclosed prior art systems.
2. The examiner contends that synchronizing (compensating for delay via a buffer) in **any** digital system is inherent to said system, and again notes that applicant's specification provides no implementation level details for the claimed delay matching buffers.
3. As per applicant's arguments that claims 10,21,22 (and depending claims) do not have any of the complained elements, the examiner notes the entertainment audio element and the non-training audio element, and the outputting of audio element.
4. The examiner notes applicant's arguments concerning the sampling stages in the arguments page 11. The examiner agrees with applicant's statement that A/D and D/A converters are inherent to applicant's claimed device. The examiner further contends that said converters are inherent to any digital system with an analog interface (including the prior art). The examiner further contends that sample rate converters are inherent to any system which adapts one signal via another (such as the disclosed prior art echo canceller that trains on near-end audio) in order for the digital system to be synchronized. Again the examiner

Art Unit: 2614

notes that applicant's specification is silent as to the actual implementation of any initial sampling stages, and how they function in relation to the claimed sample rate converters.

5. As per applicant's arguments concerning the advantage of processor savings in running at a lower rate, the examiner notes that running any digital system at a lower rate inherently provides processor savings. Again the examiner notes that sampling and sample rate conversion are inherent to **any** digital system with an analog interface. The symbols must be synchronized in order for the disclosed training to occur.
6. As per applicant's arguments regarding processor load, the examiner maintains that applicant has not disclosed anywhere in the specification that describes how the current and average loads are determined. Applicant again is relying on inherency and knowledge of one skilled in the art to overcome the enablement rejection. The examiner disagrees and contends that one skilled in the art would not know how to determine the claimed loads with the amount of detail actual given in the specification. The examiner maintains the 112 rejection, but for the purpose of examination the examiner assumes the claim element is read as the basic resource management that is inherent to **any** digital processing system (if resources are not available then certain functions must be given priority over other functions).
7. As per applicant's arguments concerning the double talk detector the examiner again notes that applicant's specification does not disclose how the claimed inhibiting function will work in conjunction with the well known double talk detector. Does applicant mean to state that the claimed device does not use a double talk detector? The examiner maintains that the inhibiting function is not enabled.

Art Unit: 2614

8. As per applicant's arguments concerning what defines an entertainment signal, the examiner notes that applicant still has not provided a concrete definition of the term 'entertainment' as used in the claims. The applicant cites an entertainment sound is defined as one provided by an entertainment application. The examiner again notes that in this case 'entertainment' is clearly not defined. The examiner maintains the rejection and assumes that any audible signal may be considered entertainment. Entertainment is subjective and varies from person to person. The examiner again requests clarification from applicant.
9. As per applicant's arguments that Nyhart does not disclose acoustic echo cancellation, the examiner notes that Nyhart uses the term sidetone for echo and clearly discloses acoustic echo cancelling. The examiner requests applicant fully read the entire Nyhart patent to fully understand what Nyhart is disclosing.
10. Concerning applicant's various comments about the differences between Nyhart and the claimed device, including examiner's 'failed' inherency arguments, the examiner notes How many times applicant had to rely on 'well known' or 'inherent' details in order to enable the claimed device (remarks pages:8-26).
11. As per applicant's arguments regarding the 'streaming audio' element of the claims, the examiner maintains a reasonably broad reading of the claim element and further notes that again applicant's specification does not provide any limiting definition of the broad term 'streaming audio'. Furthermore the examiner contends that it would have been obvious to one skilled in the art to implement any known type of non-training audio to train the canceller, because those are all known type of near-end audio (which is what is disclosed by Nyhart).

Art Unit: 2614

12. The applicant again repeats arguments that the claimed sample converters and entertainment audio, microphone, speaker, processor resource management are not disclosed in Nyhart. The examiner notes applicant's responses to the 112 rejection (remarks pages 8-20) which argue that those claim elements are enabled in applicant's specification. Applicant is attempting to differentiate between the claimed device and the prior art by using claim elements that are neither clearly defined nor disclosed with any implementation level details in the submitted specification.
13. As per applicant's arguments concerning claim 9, the examiner again maintains that a digital system is driven and synchronized via clock signals which are counters that each function stage relies upon in order to act in synchronization with every other claimed function.

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
2. **Claims 1-27** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Art Unit: 2614

As per **claims 1,6,7,8,27**, the examiner notes that applicant has refuted the examiner's contention that it is well known and obvious to manage resources. Based on applicant's arguments (remarks page 13), the examiner notes that applicant has not provided any specific details as to how the system would monitor the total load on the processor (or even every process handled by said processor). Further the applicant has not providing any timing diagrams or algorithms by which the processor determines the 'average load'.

Furthermore, the examiner notes that it is not disclosed how the claimed inhibiting of the adaptive filter/ audio training application is performed in view of the well known function of a double-talk detector, which also limits the filter adaptation.

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. **Claims 1-27**, rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims use the phrase 'entertainment' to describe an application, and a sound adaptor. It is not clear what specifically defines an 'entertainment sound adaptor' or an 'entertainment application'. Applicant's specification does not clearly define the phrases.

Art Unit: 2614

For the purpose of examination, the examiner assumes that any type of audio signal or audio signal processing means (application/sound adaptor) may be considered 'entertainment'.

As per **claims 6-8,27**, it is not clear what 'minimizing' the use of a processor would entail. Since applicant's spec does not provide any specific implementation details, it is not possible to discern what load would be considered 'minimized'. Further, it is not clear what an 'average load' for a given processor would be considered to be. Again, applicant's specification is very sparse when it comes to actual implementation details.

For the purpose of examination, the examiner assumes the above items (resource management) are well known and obvious steps to take when designing any processor based system.

As per **claims 4**, the claim depends from claim 1 which recites a first computer **or** a peripheral for a second computer. If the peripheral for a second computer is used, then it is not clear how the first computer is a peripheral for a second computer. For the purpose of examination the examiner assumes applicant is referring to the well known function of resource sharing via computer networking.

Clarification/correction is requested.



Art Unit: 2614

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-4,9-15,20-22,27** rejected under 35 U.S.C. 103(a) as being anticipated by Nyhart et al. (5553137).

As per **claims 1,12**, Nyhart discloses an acoustic echo canceller (Col 1 lines 21-40) that trains on ‘non-training’ audio. The system inherently comprises an A/D sampler to sample the incoming microphone signal because the system is digital. However, Nyhart does not specify the sampling rate of the audio signal in relation to the audio of the telephone functions

The examiner contends that it would have been obvious to one of ordinary skill in the art that any number of signaling frequencies could have been chosen for the telephone and audio signal used for training, or realize that the training could occur at a different clock rate than telephone signaling as a matter of design choice.

As per **claim 10**, it is rejected as per **claim 1**, Nyhart discloses that the dialing tones (preset signals that are used to notify of an event unrelated to training that are also used for training) (Col 1 lines 45-60).

As per **claims 2,13**, they are rejected as per claim 1.

As per **claims 3,11,14,22**, it may be audio.

As per **claims 9,20**, the examiner contends that any initialization stage for a communications device would inherently comprise an indication to the training portion as to when to start (a number of training calls being reached) for the purpose of telling the training when to start. Additionally the examiner contends that once the echo has been reduced to an acceptable threshold, the system inherently comprises a counter (clocking) in order to signal the rest of the system that the training has been completed. This counter would be adaptive, since it is based on the echo canceller being trained.

3. **Claims 4,15,23-26,5,16,7,8,18,19,28**, rejected under 35 U.S.C. 103(a) as being unpatentable over Nyhart (5553137) as applied to claims 1,12.

As per **claims 4,15**, Nyhart discloses a first computer but does not disclose it networked to a second computer.

It would have been obvious to one skilled in the art that computers could be networked for the inherent advantage of sharing resources.

As per **claim 23**, it is rejected as per the claim 1 rejection, however Nyhart doesn't disclose the specifics of the terminal where the echo canceller is implemented.

Art Unit: 2614

It would have been obvious to one of ordinary skill in the art at the time of this application that an echo canceller could be implemented on a phone (which is also a conferencing device) or computer with a known interface (USB,1394) that produces the external audio signal for training for the purpose of removing echoes from those devices.

As per **claims 24-26**, they are rejected as per the claim 1 rejection.

As per **claims 5,16**, Nyhart discloses the audio training signal for the canceller which is digitally processed. As such, the system inherently comprises an analog-to-digital converter, which will sample the training audio in the same microphone input that receives the telephone signaling (for a conferencing application for example). The ADC inherently comprises a 'sample rate converter' which will resample any input signal into the preset sampling rate (which will be the same as the telephone signaling (conferencing application)).

As per **claim 7,8,18,19,27**, examiner contends it would have been obvious to balance and manage the processor resources in a given system as necessary to perform the disclosed functions of communicating and echo cancelling.

As per **claim 28**, it would have been obvious to one skilled in the art that the audio could be sampled at any rate, and that the audio used for training could be originally sampled at another rate because Nyhart discloses that any near end audio can be used.

Art Unit: 2614

4. **Claims 6,17** rejected under 35 U.S.C. 103(a) as being unpatentable over Nyhart (5553137) as applied to claims 1,12, and further in view of applicant's admitted prior art (spec).

As per **claims 6,17**, Nyhart's system comprises a speaker, and mic (fig. 1), but does not give specifics of the echo canceller.

Applicant's admitted prior art discloses well known adaptive filters used to perform the echo cancelling. The digital system inherently comprises means to delay all signals paths so as to synchronize the signals ( to give 'real time' bidirectional communication.) (spec pages 1 and 2). It would have been obvious to one of ordinary skill in the art at the time of this application to implement well known echo canceller features like a filter and delay means for the purpose of implementing the disclosed canceller.

#### **Additional set of rejections**

#### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

Art Unit: 2614

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1-4,9-15,20-22,27,28** rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (background section of spec), and further in view of Nyhart et al. (5553137).

As per **claims 1,12**, applicant's admitted prior art discloses known acoustic echo cancellers but does not disclose the specifics of a training technique to train on 'non-training' audio.

Nyhart discloses an echo canceller training technique (Col 1 lines 21-40) that trains on 'non-training' audio that can be applied to any type of echo canceller system (Col 4 lines 20-30). The system inherently comprises an A/D sampler to sample the incoming microphone signal because the system is digital. However, Nyhart does not specify the sampling rate of the audio signal in relation to the audio of the telephone functions

The examiner contends that it would have been obvious to one of ordinary skill in the art that any number of signaling frequencies could have been chosen for the telephone and audio signal used for training, or realize that the training could occur at a different clock rate than telephone signaling as a matter of design choice.

As per **claim 10**, it is rejected as per **claim 1**, Nyhart discloses that the dialing tones (preset signals that are used to notify of an event unrelated to training that are also used for training) (Col 1 lines 45-60).

Art Unit: 2614

As per **claims 2,13**, they are rejected as per claim 1.

As per **claims 3,11,14,22**, it may be audio.

As per **claims 4,15**, Nyhart discloses a first computer but does not disclose it networked to a second computer.

It would have been obvious to one skilled in the art that computers could be networked for the inherent advantage of sharing resources.

As per **claims 9,20**, the examiner contends that any initialization stage for a communications device would inherently comprise an indication to the training portion as to when to start (a number of training calls being reached) for the purpose of telling the training when to start. Additionally the examiner contends that once the echo has been reduced to an acceptable threshold, the system inherently comprises a counter (clocking) in order to signal the rest of the system that the training has been completed. This counter would be adaptive, since it is based on the echo canceller being trained.

As per **claim 28**, it would have been obvious to one skilled in the art that the audio could be sampled at any rate, and that the audio used for training could be originally sampled at another rate because Nyhart discloses that any near end audio can be used.

Art Unit: 2614

7. **Claims 23-26,5,16,7,8,18,19,6,17** rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (background section of spec), in view of Nyhart (5553137) as applied to claims 1,12.

As per **claim 23**, it is rejected as per the claim 1 rejection, however Nyhart doesn't disclose the specifics of the terminal where the echo canceller is implemented.

It would have been obvious to one of ordinary skill in the art at the time of this application that an echo canceller could be implemented on a phone (which is also a conferencing device) or computer with a known interface (USB,1394) that produces the external audio signal for training for the purpose of removing echoes from those devices.

As per **claims 24-26**, they are rejected as per the claim 1 rejection.

As per **claims 5,16**, Nyhart discloses the audio training signal for the canceller which is digitally processed. As such, the system inherently comprises an analog-to-digital converter, which will sample the training audio in the same microphone input that receives the telephone signaling (for a conferencing application for example). The ADC inherently comprises a 'sample rate converter' which will resample any input signal into the preset sampling rate (which will be the same as the telephone signaling (conferencing application)).

Art Unit: 2614

As per **claim 7,8,18,19,27**, examiner contends it would have been obvious to balance and manage the processor resources in a given system as necessary to perform the disclosed functions of communicating and echo cancelling.

As per **claims 6,17**, applicant's admitted prior art discloses well known adaptive filters used to perform the echo cancelling. The digital system inherently comprises means to delay all signals paths so as to synchronize the signals ( to give 'real time' bidirectional communication.) (spec pages 1 and 2). It would have been obvious to one of ordinary skill in the art at the time of this application to implement well known echo canceller features like a filter and delay means for the purpose of implementing the disclosed canceller.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Jamal whose telephone number is 571-272-7498, and whose email address is alexander.jamal@uspto.gov

The examiner can usually be reached on M-F 8AM-5PM.

If attempts to reach the examiner by telephone or email are unsuccessful, the examiner's supervisor, Curtis A Kuntz can be reached on 571-272-7499.



Art Unit: 2614

The fax phone numbers for the organization where this application or proceeding is assigned are **571-273-8300** for regular communications and **571-273-8300** for After Final communications.

/Alexander Jamal/

Primary Examiner, Art Unit 2614

Examiner Alexander Jamal

October 13, 2009